FACT SHEET FOR STATE WASTE DISCHARGE PERMIT ST 6023
ELBE WATER AND SEWER DISTRICT

9/1/2004

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INTRODUCTION

This fact sheet is a companion document to the draft State Waste Discharge Permit No ST 6023. The Department of Ecology (Department) is proposing to issue this permit, which will allow discharge of wastewater to waters of the state of Washington. This fact sheet explains the nature of the proposed discharge, the Department's decisions on limiting the pollutants in the wastewater, and the regulatory and technical bases for those decisions.

Washington State law [Revised Code of Washington (RCW) 90.48.080 and 90.48.162] requires that a permit be issued before discharge of wastewater to waters of the state is allowed. Regulations adopted by the state include procedures for issuing permits [Chapter 173-216 Washington Administrative Code (WAC)], technical criteria for discharges from municipal wastewater treatment facilities (Chapter 173-221 WAC) and water quality criteria for ground waters (Chapter 173-200 WAC). They also establish the basis for effluent limitations and other requirements which are to be included in the permit.

This fact sheet and draft permit are available for review by interested persons as described in Appendix A--Public Involvement Information.

The fact sheet and draft permit have been reviewed by the Southwest Regional Office of the Washington State Department of Health and by the Permittee. Errors and omissions identified in these reviews have been corrected before going to public notice. After the public comment period has closed, the Department will summarize the substantive comments and the response to each comment. The summary and response to comments will become part of the file on the permit and parties submitting comments will receive a copy of the Department's response. The fact sheet will not be revised. Changes to the permit will be addressed in Appendix D--Response to Comments.

GENERAL INFORMATION	
Applicant	Elbe Water and Sewer District
Facility Name and Address	Elbe Water and Sewer District P.O. Box 4 Elbe, WA 98330-0004
Type of Treatment System	Recirculating Sand Filter to Mound Drainage System
Discharge Location	Latitude: 46º 46' 03" N Longitude: 122º 11' 46" W
Legal Description of Application Area	SE ¼ of Section 20, T 15N, R5E, W.M.
Contact at Facility	Name: Gayle Adams Telephone #: (360) 569-2772
Responsible Official	Name: Gayle Adams, Commissioner Address: P.O. Box 4, Elbe, WA 98330-0004 Telephone #: (360) 569-2772

BACKGROUND INFORMATION

DESCRIPTION OF THE COLLECTION AND TREATMENT SYSTEM

HISTORY

Elbe is a small unincorporated town located on a relatively narrow part of the Nisqually River Valley at the inlet to Alder Lake. Mt. Rainier National Park is about 10 miles to the east of Elbe and Alder is about 4.5 miles to the west. The economy of the area is based on forestry and tourism activities.

The physical character of the area has been formed by the activity of the Nisqually River and Mt. Rainier, including local alluvial and glacial erosion and deposition. The vegetation in the area is primarily second growth Douglas Fir. The climate is typical for the seaward slopes of the Cascade Mountains featuring wet winters with occasional heavy snowfall and moderate, dry summers. Clayey glacial till is one of the dominant soils with water ponding above the clayey subsoil during winter and spring rainy periods. Land use is primarily residential with significant commercial development to service tourism.

The Elbe Water and Sewer District service area consists of approximately 1.36 square miles located adjacent to and including the community of Elbe. It also generally conforms to the projected land usage of the area as it is outlined in the "Nisqually River Basin Water Quality Management Plan," dated May, 1974.

Members of the Elbe Community recall that at one time sewage was conveyed through a collection system that was built between 1906 and 1917 and collected in a large septic tank that discharged down a gradual slope of the then Elbe River Valley. When the City of Tacoma constructed Alder Dam in 1944 the rising water destroyed the treatment facility and outfall line. Raw sewage then discharged untreated from an open-end outfall pipe into Alder Lake west of State Highway 5 near the Lutheran Church. In 1945 the citizens of Elbe formed "The Elbe Service Cooperative" to provide water, sewerage, and fire protection services. In 1975 due to complaints concerning the water system Elbe decided to form a Water District. A year later due to concerns of the unsanitary conditions caused by the untreated sewage discharge to the lake the Elbe Water and Sewer District was formed and the community prepared a "Plan of Study" which was submitted to the Department in 1978. The plan discussed options for a new wastewater collection and treatment system.

In 1983 the Elbe Water and Sewer District began the actual planning, design, and construction of a wastewater treatment system and replacement of the old collection system with funding assistance from the Environmental Protection Agency (EPA). The project was funded under the innovative and alternative treatment technology program that included a guarantee to modify or replace the facility in the event of its failure to perform to standards. The wastewater treatment system which began operation in 1985 consisted of a new gravity collection system, influent pump station, community septic tank, and community mound treatment and disposal system. Soon after construction the mound system began to exhibit effluent breakout conditions and the Elbe wastewater facility was determined to be a failed system.

Since the facility did not meet acceptable treatment standards the Elbe wastewater system was eligible for modification or replacement monies under the EPA innovative and alternative treatment technology program. After much negotiation and many suggested alternatives a cost-effective solution was developed as the proposed project. Upgrades to the Elbe wastewater treatment system began September 1994 and were completed in May of 1995. The upgrades included modification of the existing septic tank, adding two new recirculating sand filters, and expansion of the existing mound system by constructing a larger mound system over the existing mounds.

COLLECTION SYSTEM STATUS

The original collection system for the community of Elbe was constructed between 1906 and 1917. There were no manholes in the original sewage collection system and the exact location of the collection lines was unknown. The community's method of removal of stoppages was to dig down to the line break it open and flush with a fire hose and then patch the line with concrete.

The entire collection system and side sewers were replaced in the early 1980s when the septic tank and mound system were constructed. The main collection system consists of an 8-inch PVC pipe gravity flow system with manholes placed at least every 400 feet. The service laterals are 6-inch PVC pipe with a cleanouts placed on every service at the property line. The connections from the residences to the service laterals were constructed in 1981 with the help of a HUD block grant and were capped off until the treatment system was functional and they could be connected to the main collection system sometime in 1983.

The sewer lines were inspected during the 1994 upgrade and found to be in good condition and it was recommended that the sewers be flushed at least once per year. Since there is no storm drainage system for Elbe during periods of heavy rain, stormwater flows across the street surfaces and over sanitary sewer manholes and could contribute excess flow to the system during high stormwater runoff events. Due to the lack of wastewater flow records it is impossible to determine the amount of infiltration and inflow occurring in the Elbe collection system.

TREATMENT PROCESSES

The Elbe Water and Sewer Districts wastewater treatment facility consists of a gravity collection system which flows to the influent pump station. The influent pump station consists of two submersible pumps with a design capacity of 80 gpm. The wastewater is then lifted into a three-celled community septic tank with a 32,400 gallon capacity. The average hydraulic detention time is 27 hours. Effluent from the septic tank flows by gravity to the two recirculating sand filters. After making several passes through the recirculating gravel filter flow is pumped to the community mound treatment and disposal system where flow is alternated between four zones.

The four mound treatment dosing pumps are controlled by a timer and operate four times per day each at the design flow of 18,000 gpd. Thus, the mound dosing pumps operate 16 times per day. One quarter of the mound is dosed each pump cycle. Each pump cycle is controlled by a timer to pump approximately 1,125 gallons to the mound.

The dosing pumps are also controlled in parallel with float switches. If the accumulated level in the mound dosing tank is lower than the "Timer Override Off" float switch, the next pump cycle will be skipped. If the accumulated level in the mound dosing tank is greater than the "Timer Override On" float switch, the next mound dosing pump will be started and operated for the designated pumping cycle time. This will allow the RSF mixing tank to equalize the flows for a peak day.

A flap valve allows one-way flow from the mound dosing tank to the RSF mixing tank. This allows the recirculation of flows to the RSFs but will not permit septic tank effluent to short circuit to the mound dosing tank. Mixing the RSF recycle and the septic tank effluent in the RSF dosing tank encourages denitrification of nitrates in the RSF recycle flow.

Piped connections are provided between the tanks to utilize storage volume and to encourage blending of flows. High level overflows will be distributed between the RSF dosing tanks and the mound dosing tanks.

In order to prevent ground water from entering the mound treatment site a subsurface French drain was installed across the north end and east side of the mound. An impervious liner was also installed to prevent short circuiting of the effluent into the drainage system. Manholes connect drain pipe located in the French drain gravel and provide a system for periodic cleaning. Flapper gates were installed on the outlets of the drain pipes to prevent debris from entering the pipe during periods of high water. The drain pipes daylight in the riprap located in Alder Lake in the northwest and southeast corner of the site. In order to monitor ground water levels and quality three 4-inch PVC piezometers were installed along the west side of the mound. The piezometers are about 6 feet deep with the bottom 18 inches perforated to allow ground water to flow into the tubes.

RESIDUAL SOLIDS

Incidental solids (rags, scum, and other debris) that collect in the septic tank are removed during routine pumping of the tank and are disposed of properly.

GROUND WATER

The site hydrogeology consists of unconsolidated alluvial and glacial deposits overlying basalt bedrock. The upper alluvial deposits show considerable lithologic variation ranging from uniform sand under the mounds to sandy silt and silty sand in the open area east of the mound system. At the Elbe water-supply well location (about 900 feet south of the mound) the alluvium consists of 18 feet of sand. The alluvium overlies a 40-foot-thick till-like deposit. A sand and gravel aquifer underlies the till-like material at a depth of 58 feet. This sand and gravel aquifer is the source of water for the Elbe water-supply well. The till-like material probably has a low permeability and limits the hydraulic interaction of surficial waters and the sand and gravel aquifer. Groundwater flow is generally eastward toward Alder Lake. The target aquifer for monitoring groundwater at the facility is the saturated alluvial deposits above the till.

At the maximum lake elevation recorded from 1969 to 1982 there is at least 48 inches between the bottom of the drain bed and the lake elevation at all times. Taking into account how many consecutive days the lake was at maximum level and capillary action causing a saturated zone above the lake level it can be concluded that a permanent zone of 38 inches would be maintained between the bottom of the drain bed and the intermittently saturated zone and a distance of 45 inches to the permanent saturated zone.

PERMIT STATUS

The previous permit for this facility was issued on March 5, 1985.

An application for permit renewal was submitted to the Department on May 8, 2003, and accepted by the Department on May 20, 2004.

SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT

The facility last received an inspection on June 30, 2003. The inspection noted the need for Elbe to submit signed Discharge Monitoring Reports (DMRs) once a month and no later than the 15th day of the month following the completed monitoring period. The inspection also noted excessive weed growth on the recirculating gravel filter beds and the need to have it removed to ensure proper operation. The permittee was also asked to monitor soft spots noticed on the bank of the southeast corner of the mound.

During the history of the previous permit, the Permittee has continuously failed to submit Discharge Monitoring Reports (DMRs) and was issued and Administrative Order No. DE 02WQSRS018 on December 5, 2002. The order required the monthly submittal of signed DMRs. The Elbe Water and Sewer District has not complied with this order and could be subject to further enforcement action by the

Department. The Department continues to make phone calls, conducted site visits, and send correspondence encouraging Elbe to submit the required monthly monitoring reports.

WASTEWATER CHARACTERIZATION

NOTE: The following data is a compilation of limited data submitted with the monthly DMRs and does not do a good job of characterizing the wastewater from the Elbe wastewater treatment facility.

Wastewater Characterization (compiled from very limited DMR data)

Parameter	Concentration
Influent Flow	Monthly Average 8120 gpd; Max 17100 gpd
Influent BOD_5	Monthly Average 340 mg/L
Influent TSS	Monthly Average 130 mg/L
Influent Ammonia-N	Monthly Average 98 mg/L
Gravel Filter Effluent BOD_5	Monthly Average 6.3 mg/L
Gravel Filter Effluent TSS	Monthly Average 5.3 mg/L
Gravel Filter Effluent Fecal Coliform	To numerous to count
Gravel Filter Effluent Ammonia-N	Monthly Average 2.0 mg/L
Gravel Filter Effluent Nitrate	Monthly Average 14 mg/L
Gravel Filter Effluent Ortho-Phosphate PO_4	Monthly Average 4.5 mg/L

PROPOSED PERMIT LIMITATIONS

State regulations require that limitations set forth in a waste discharge permit must be either technology- or water quality-based. Wastewater must be treated using all known, available, and reasonable treatment (AKART) and not pollute the waters of the state. The minimum requirements to demonstrate compliance with the AKART standard are derived from the *Water Reclamation and Reuse Standards*, the *Design Criteria for Municipal Wastewater Land Treatment*, and Chapter 173-221 WAC.

The permit also includes limitations on the quantity and quality of the wastewater applied to the drain field that have been determined to protect the quality of the ground water. The approved engineering report includes specific design criteria for this facility. Water quality-based limitations are based upon compliance with the Ground Water Quality Standards (Chapter 173-200 WAC).

The more stringent of the water quality-based or technology-based limits are applied to each of the parameters of concern. Each of these types of limits is described in more detail below.

TECHNOLOGY-BASED EFFLUENT LIMITATIONS

All waste discharge permits issued by the Department must specify conditions requiring available and reasonable methods of prevention, control, and treatment of discharges to waters of the state (WAC 173-216-110). The following permit limitations are necessary to satisfy the requirement for AKART:

The plant will have to meet certain limits before discharging to the mound. These limits include:

	EFFLUENT LIMITATIONS	
Parameter	**Average Monthly**	**Average Weekly**
Flow	18,000 GPD	28,700 GPD
BOD_5	30 mg/L, 4.5 lbs/day	45 mg/L, 6.75 lbs/day
TSS	30 mg/L, 4.5 lbs/day	45 mg/L, 6.75 lbs/day
pH	Shall not be outside the range 6.5 to 8.5	

The technology-based mass limits for BOD and TSS were derived with the following equation.

The monthly design flow of (0.018 mgd) x concentration limit (30 mg/L) x conversion factor (8.34) = mass limit 4.5 lbs/day.

The weekly average effluent mass loading for BOD and TSS is calculated as 1.5 x monthly loading = 6.75 lbs/day.

GROUND WATER QUALITY-BASED EFFLUENT LIMITATIONS

In order to protect existing water quality and preserve the designated beneficial uses of Washington's ground waters including the protection of human health, WAC 173-200-100 states that waste discharge permits shall be conditioned in such a manner as to authorize only activities that will not cause violations of the Ground Water Quality Standards. The goal of the ground water quality standards is to maintain the highest quality of the state's ground waters and to protect existing and future beneficial uses of the ground water through the reduction or elimination of the discharge of contaminants to ground water [WAC 173-200-010(4)].

Applicable ground water criteria as defined in Chapter 173-200 WAC and in RCW 90.48.520 for this discharge include the following:

Ground Water Quality Criteria

Total Coliform Bacteria	1 Colony/ 100 mL
Total Dissolved Solids	500 mg/L
Chloride	250 mg/L
pH	6.5 to 8.5 standard units

The Department has reviewed existing records and is unable to determine if background ground water quality is either higher or lower than the criteria given in Chapter 173-200 WAC; therefore, the Department will use the criteria expressed in the regulation in the proposed permit. The discharges authorized by this proposed permit are not expected to interfere with beneficial uses.

No valid up gradient background data were available for the pollutants listed above. The Permittee will not be required to collect background concentrations near the point of discharge. The shallow alluvial aquifer system would be technically challenging to characterize and monitor and the facility does not have the resources to conduct these activities. Instead, the facility will be monitoring existing shallow piezometers to measure potential effects on the ground water quality.

MONITORING REQUIREMENTS

Monitoring, recording, and reporting are specified to verify that the treatment process is functioning correctly, that ground water criteria are not violated, and that effluent limitations are being achieved (WAC 173-216-110).

INFLUENT AND EFFLUENT MONITORING

The monitoring and testing schedule is detailed in the proposed permit under Condition S2. Specified monitoring frequencies take into account the quantity and variability of the discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring.

GROUND WATER MONITORING

The monitoring of ground water at the site is required in accordance with the Ground Water Quality Standards, Chapter 173-200 WAC. The Department has determined that this discharge has a potential to pollute the ground water. Therefore the Permittee is required to evaluate the impacts on ground water quality. Monitoring of the ground water at the site boundaries and within the site is an integral component of such an evaluation.

OTHER PERMIT CONDITIONS

REPORTING AND RECORDKEEPING

The conditions of S3 are based on the authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 173-216-110).

FACILITY LOADING

The design criteria for the treatment facility are taken from August 17, 1998, engineering plans prepared by R.W. Beck and Associates and are as follows:

Average annual flow:	12,000 GPD
Monthly average flow (max. month):	18,000 GPD
Peak day flow:	28,700 GPD
Instantaneous peak flow:	75 GPM
BOD influent loading @ AMMF:	35 lbs/day

The permit requires the Permittee to maintain adequate capacity to treat the flows and waste loading to the treatment plant (WAC 173-216-110[4]). The Permittee is required to submit an engineering report when the plant reaches 85 percent of its flow or loading capacity. For significant new discharges, the permit requires a new application and an engineering report (WAC 173-216-110[5]).

OPERATIONS AND MAINTENANCE

The proposed permit contains Condition S.5 as authorized under RCW 90.48.110, WAC 173-220-150, Chapter 173-230 WAC, and WAC 173-240-080. It is included to ensure proper operation and regular maintenance of equipment, and to ensure that adequate safeguards are taken so that constructed facilities are used to their optimum potential in terms of pollutant capture and treatment.

RESIDUAL SOLIDS HANDLING

To prevent water pollution the Permittee is required in permit Condition S6 to store and handle all residual solids (grit, screenings, scum, sludge, and other solid waste) in accordance with the requirements of RCW 90.48.080 and State Water Quality Standards.

The final use and disposal of sewage sludge from this facility is regulated by U.S. EPA under 40 Code of Federal Regulations (CFR) 503 and by the Department under Chapter 70.95J RCW and Chapter 173-208 WAC. The disposal of other solid waste is under the jurisdiction of the local health district.

Requirements for monitoring sewage sludge and recordkeeping are included in this permit. This information will by used by the Department to develop or update local limits and is also required under 40 CFR 503.

PRETREATMENT

WAC 173-216-110 requires that the list of prohibitions in WAC 173-216-060 be included in the permit.

Federal pretreatment requirements in 40 CFR 403 and Sections 307(b) and 308 of the Clean Water Act apply to this facility. Therefore notification to the Department is required when pretreatment prohibitions are violated and when new sources of commercial or industrial wastewater discharge are added to its system.

GENERAL CONDITIONS

General Conditions are based directly on state laws and regulations and have been standardized for all industrial waste discharge to ground water permits issued by the Department.

Condition G1 requires responsible officials or their designated representatives to sign submittals to the Department. Condition G2 requires the Permittee to allow the Department to access the treatment system, production facility, and records related to the permit. Condition G3 specifies conditions for modifying, suspending or terminating the permit. Condition G4 requires the Permittee to apply to the Department prior to increasing or varying the discharge from the levels stated in the permit application. Condition G5 requires the Permittee to submit written notice of significant increases in the amount or nature of discharges (typically new industrial discharges) into the sewer system tributary to the permitted facility. Condition G6 requires the Permittee to construct, modify, and operate the permitted facility in accordance with approved engineering documents. Condition G7 prohibits the Permittee from using the permit as a basis for violating any laws, statutes or regulations. Condition G8 requires application for permit renewal 60 days prior to the expiration of the permit. Condition G9 requires the payment of permit fees. Condition G10 describes the penalties for violating permit conditions.

RECOMMENDATION FOR PERMIT ISSUANCE

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to control toxics, and to protect human health and the beneficial uses of waters of the state of Washington. The Department proposes that the permit be issued for five years.

REFERENCES FOR TEXT AND APPENDICES

Faulkner, S.P., Patrick Jr., W.H., Gambrell, R.P., May-June, 1989. Field Techniques for Measuring Wetland Soil Parameters, Soil Science Society of America Journal, Vol. 53, No.3.

Washington State Department of Ecology, 1993. Guidelines for Preparation of Engineering Reports for Industrial Wastewater Land Application Systems, Ecology Publication # 93-36. 20 pp.

Washington State Department of Ecology and Department of Health, 1997. Water Reclamation and Reuse Standards, Ecology Publication # 97-23. 73 pp.

Washington State Department of Ecology.

Laws and Regulations(http://www.ecy.wa.gov/laws-rules/index.html)

Permit and Wastewater Related Information (http://www.ecy.wa.gov/programs/wq/wastewater/index.html)

Washington State Department of Ecology, 1996. Implementation Guidance for the Ground Water Quality Standards, Ecology Publication # 96-02.

Washington State University, November, 1981. Laboratory Procedures - Soil Testing Laboratory. 38 pp.

APPENDICES

APPENDIX A--PUBLIC INVOLVEMENT INFORMATION

The Department has tentatively determined to reissue a permit to the applicant listed on page one of this fact sheet. The permit contains conditions and effluent limitations which are described in the rest of this fact sheet.

Public notice of application was published on May 16, 2004, and May 23, 2004, in the *Tacoma News Tribune* to inform the public that an application had been submitted and to invite comment on the reissuance of this permit.

The Department will publish a Public Notice of Draft (PNOD) on _____ in _____ to inform the public that a draft permit and fact sheet are available for review. Interested persons are invited to submit written comments regarding the draft permit. The draft permit, fact sheet, and related documents are available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at the regional office listed below. Written comments should be mailed to:

Carey Cholski
Water Quality Permit Administrator
Department of Ecology
Southwest Regional Office
P.O. Box 47775
Olympia, WA 98504-7775

Any interested party may comment on the draft permit or request a public hearing on this draft permit within the 30-day comment period to the address above. The request for a hearing shall indicate the interest of the party and reasons why the hearing is warranted. The Department will hold a hearing if it determines there is a significant public interest in the draft permit (WAC 173-216-100). Public notice regarding any hearing will be circulated at least 30 days in advance of the hearing. People expressing an interest in this permit will be mailed an individual notice of hearing.

Comments should reference specific text followed by proposed modification or concern when possible. Comments may address technical issues, accuracy and completeness of information, the scope of the facility's proposed coverage, adequacy of environmental protection, permit conditions, or any other concern that would result from issuance of this permit.

The Department will consider all comments received within 30 days from the date of public notice of draft indicated above, in formulating a final determination to issue, revise, or deny the permit. The Department's response to all significant comments is available upon request and will be mailed directly to people expressing an interest in this permit.

Further information may be obtained from the Department by telephone, (360) 407-6279, or by writing to the address listed above.

This permit was written by Glenn Pieritz.

APPENDIX B--GLOSSARY

Ambient Water Quality--The existing environmental condition of the water in a receiving water body.

Ammonia--Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

Average Monthly Discharge Limitation--The average of the measured values obtained over a calendar month's time.

Best Management Practices (BMPs)--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the State. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

BOD_5--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD_5 is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

Bypass--The intentional diversion of waste streams from any portion of the collection or treatment facility.

Chlorine--Chlorine is used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.

Compliance Inspection - Without Sampling--A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

Compliance Inspection - With Sampling--A site visit to accomplish the purpose of a Compliance Inspection - Without Sampling and as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the 85 percent removal requirement. Additional sampling may be conducted.

Composite Sample--A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing discrete samples. May be "time-composite"(collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots.

Construction Activity--Clearing, grading, excavation and any other activity which disturbs the surface of the land. Such activities may include road building, construction of residential houses, office buildings, or industrial buildings, and demolition activity.

Continuous Monitoring –Uninterrupted, unless otherwise noted in the permit.

Distribution Uniformity--The uniformity of infiltration (or application in the case of sprinkle or trickle irrigation) throughout the field expressed as a percent relating to the average depth infiltrated in the lowest one-quarter of the area to the average depth of water infiltrated.

Engineering Report--A document, signed by a professional licensed engineer, which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

Fecal Coliform Bacteria--Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

Grab Sample--A single sample or measurement taken at a specific time or over as short period of time as is feasible.

Industrial Wastewater--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

Maximum Daily Discharge Limitation--The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

Method Detection Level (MDL)--The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is above zero and is determined from analysis of a sample in a given matrix containing the analyte.

pH--The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

Quantitation Level (QL)-- A calculated value five times the MDL (method detection level).

Soil Scientist--An individual who is registered as a Certified or Registered Professional Soil Scientist or as a Certified Professional Soil Specialist by the American Registry of Certified Professionals in Agronomy, Crops, and Soils or by the National Society of Consulting Scientists or who has the credentials for membership. Minimum requirements for eligibility are: possession of a baccalaureate, masters, or doctorate degree from a U.S. or Canadian institution with a minimum of 30 semester hours or 45 quarter hours professional core courses in agronomy, crops or soils, and have 5,3,or 1 years, respectively, of professional experience working in the area of agronomy, crops, or soils.

State Waters--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

Stormwater--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

Technology-based Effluent Limit--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

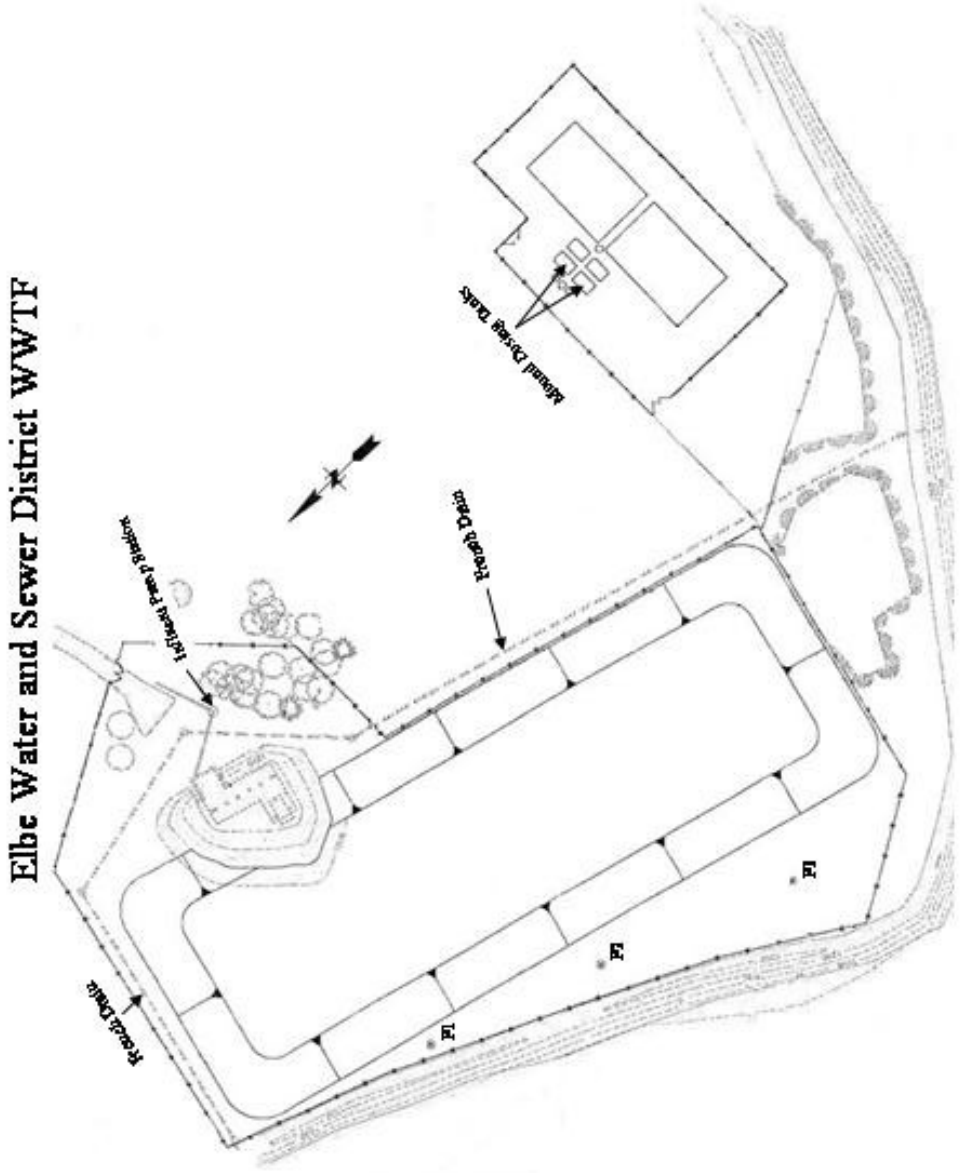
Total Coliform Bacteria--A microbiological test which detects and enumerates the total coliform group of bacteria in water samples.

Total Dissolved Solids--That portion of total solids in water or wastewater that passes through a specific filter.

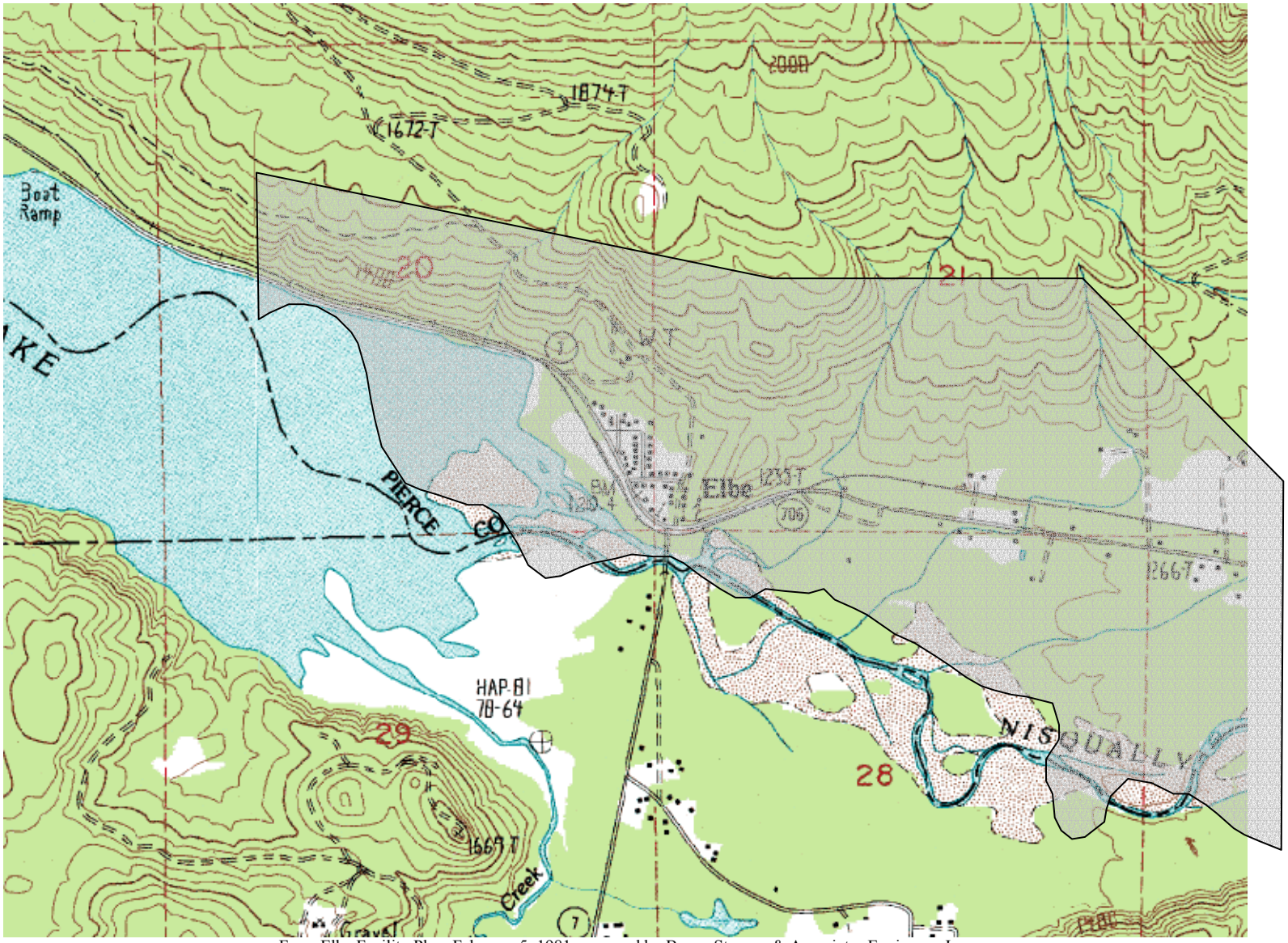
Total Suspended Solids (TSS)--Total suspended solids is the particulate material in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

Water Quality-based Effluent Limit--A limit on the concentration of an effluent parameter that is intended to prevent pollution of the receiving water.

APPENDIX C--TECHNICAL CALCULATIONS



Approximate Boundary for the
Elbe Water and Sewer District Sewerage Planning Area



From Elbe Facility Plan, February 5, 1981, prepared by Byrne-Stevens & Associates Engineers, Inc.

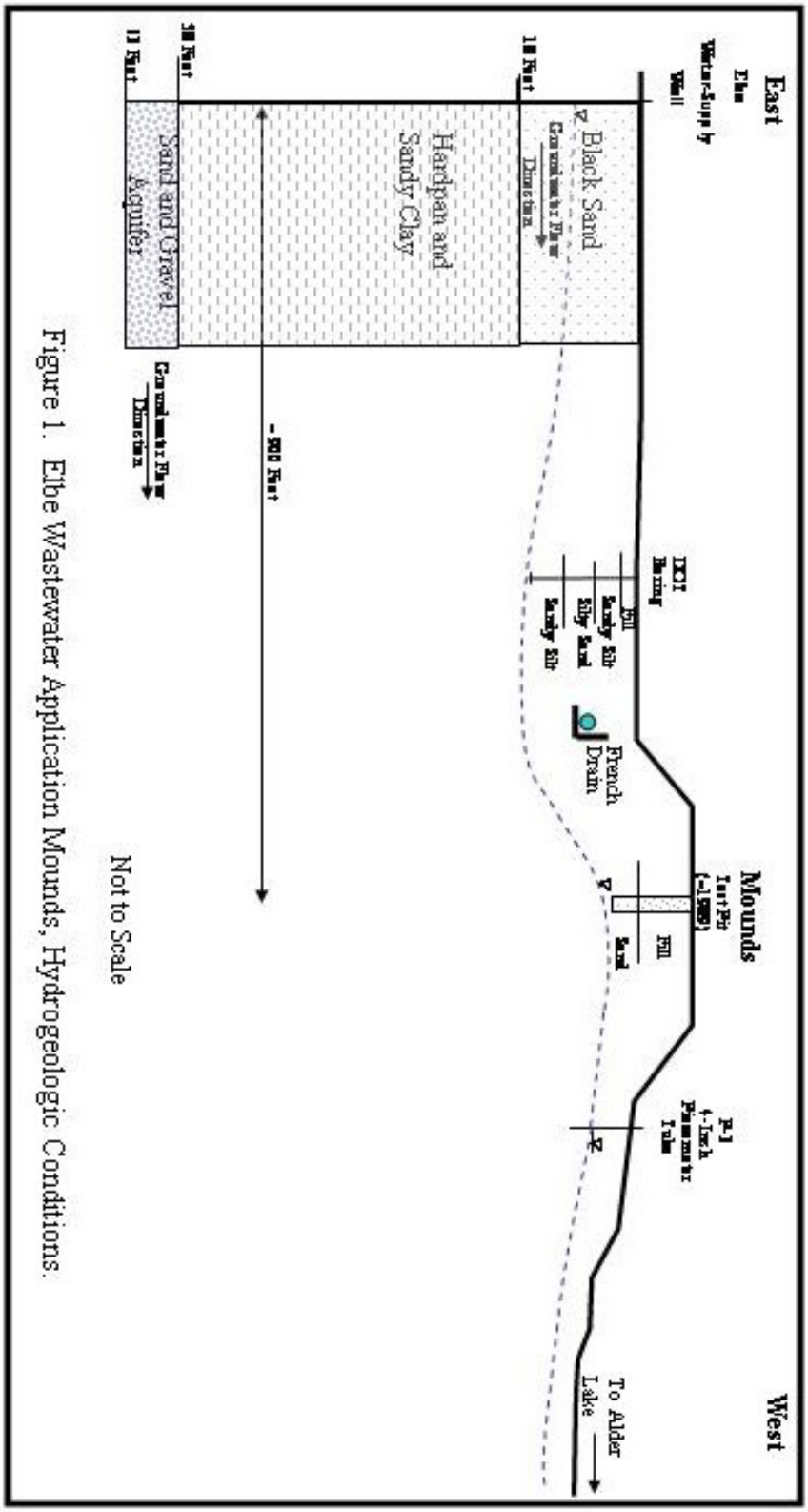


Figure 1. Elbe Wastewater Application Mounds, Hydrogeologic Conditions.

APPENDIX D--RESPONSE TO COMMENTS